

Site Comparison Study

City of Wichita

**Wichita Northwest Water Treatment Facility
Project No. 104483**

1/9/2018

Site Comparison Study

prepared for

**City of Wichita
Wichita Northwest Water Treatment Facility
Wichita, Kansas**

Project No. 104483

1/9/2018

prepared by

**Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri**

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
Alternative Site 1	Wichita Northwest WTF Alternative 1
Alternative Site 2	Wichita Northwest WTF Alternative 2
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
DASC	Kansas Data Access & Support Center
Proposed Site	Wichita Northwest WTF Proposed Site
GIS	Geographic Information System
KDHE	Kansas Department of Health and Environment
NHD	National Hydrology Dataset
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
SHPO	Kansas State Historic Preservation Office
USGS	U.S. Geological Survey
WTF	water treatment facility

1.0 INTRODUCTION

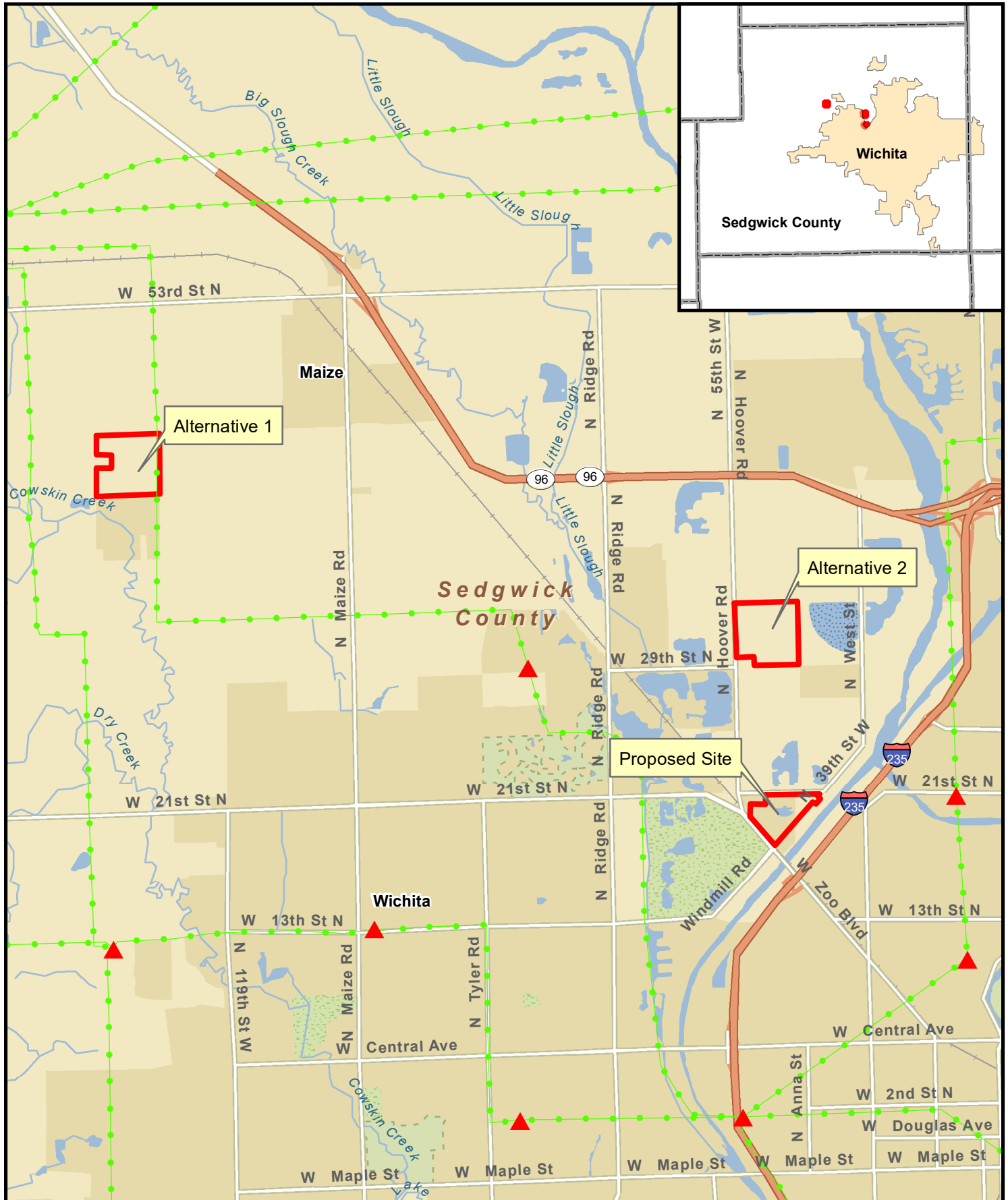
Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) has been asked to perform a high-level desktop evaluation and comparison of three potential water treatment facility (WTF) sites for the City of Wichita, Kansas. The potential WTF sites are located in Sedgwick County near Wichita, Kansas, and include the following:

- Wichita Northwest WTF Proposed Site (Proposed Site)
- Wichita Northwest WTF Alternative 1 (Alternative Site 1)
- Wichita Northwest WTF Alternative 2 (Alternative Site 2)





The above WTF sites include a site owned by the City of Wichita and two alternative sites that are not currently owned by the City of Wichita. All three sites are within an approximate 6-mile radius of each other, with the Proposed Site and Alternative 2 Site approximately 1 mile apart. Figure 1-1 illustrates the location of each WTF site.

This evaluation was prepared using publicly-available information and does not include any field reconnaissance or coordination with any agencies or the public.

The following sections include a summary of the approach used for the evaluation (Chapter 2.0), and the identification of constraints and issues associated with each WTF site and the assessment of each WTF site (Chapter 3.0). A summary section is provided in Chapter 4.0.



Legend

-  County Boundary
-  Existing Substation
-  Existing Transmission Line
-  Site Alternatives



3,500 1,750 0 3,500
 Scale in Feet

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**Figure 1-1
 Wichita Northwest
 Water Treatment Facility
 Project Area Overview**

2.0 APPROACH

The objective of the site comparison study was to provide a high-level assessment of three WTF sites for a future WTF. The entire project is located in Sedgwick County near Wichita, Kansas. The approach for the site comparison study involved several steps, including the collection of data, identification of known constraints and potential issues, preparation of constraint maps for each site, and evaluation of each site for a future WTF. The following subsections provide information on the data collection process and constraint identification used for the study.

2.1 Data Collection

Burns & McDonnell Geographic Information System (GIS) staff gathered electronic data from publicly-available sources, including the U.S. Geological Survey (USGS), ESRI, Kansas Data Access & Support Center (DASC), Kansas State Historic Preservation Office (SHPO) online database, and Sedgwick County, Kansas. Following is a listing of the various data sources used for the study.

2.1.1 Base Data

Following is a list of the base data that was obtained for the study:

- Existing Transmission Lines and Substations
- Roadways
- County Boundaries
- Streams and Rivers
- National Wetland Inventory (NWI) Wetlands
- Railroads
- National Register of Historic Places (NRHP) Sites
- Floodplains
- Pipelines
- ESRI Facilities (schools, churches, cemeteries, etc.)

- City Limits
- Protected Easements

2.1.2 State Data

Following is a list of the state data obtained from DASC:

- USGS Contours (10 Foot Intervals)
- Kansas Department of Health and Environment (KDHE) Environmental Interest Sites
- Rare Species
- Protected Areas

2.1.3 Sedgwick County, Kansas Data

Following is the list of data obtained from Sedgwick County, Kansas:

- Building Footprints
- Cemetery Locations
- City Limits
- Property Data (property parcels and subdivisions)
- Recreation Areas (parks and golf courses)
- School Locations
- Transportation (airport, railroad, roads)

2.2 Constraint Identification

Following the collection of available data, Burns & McDonnell identified the constraints and issues that could potentially be associated with each WTF site. These constraints and issues consisted predominantly of environmental and regulatory constraints. Environmental and regulatory constraints are areas where siting a WTF is impractical or less favorable for institutional or social reasons, or because the potential environmental impacts are considered excessive. The following is a list of the types of constraints that may occur within or near each WTF site based on available data.

- Federal Lands
- State Lands
- Conservation, County, or Local Lands
- Cultural Sites and Areas
- Hydrology
- Topography
- Site Access
- Critical or Sensitive Habitat, including Protected Species (Appendix A)
- Other Known Constraints

2.3 Constraint Map Preparation

Burns & McDonnell staff prepared maps for each WTF site that identified the known constraints within and adjacent to each site. The maps depicted such items as roads, topography, wetlands, floodplains, existing transmission lines, waterbodies, railroads, site boundaries, and KDHE Environmental Interest Sites.

2.4 Site Evaluation

The final step in the site comparison study was the evaluation of each potential WTF site. This task consisted of a high-level desktop review of constraint maps containing GIS data layers developed from base, State, and County data as described previously. The following section provides a discussion of the known constraints and issues and siting difficulty within each site in addition to a brief description of the site.

3.0 SITE COMPARISON ANALYSIS

This section contains a description of the site comparison analysis used in evaluating the three potential WTF sites. The description summarizes the proposed sites, identifies known constraints and issues, and provides a summary of siting difficulty for each of the sites.

3.1 Proposed Site

The Proposed Site is approximately 75.5 acres and is bordered by 21st Street to the north, a levee for the Wichita Valley Center Floodway to the east, and Zoo Boulevard to the southwest. Figure 3-1 illustrates the boundary of the Proposed Site.

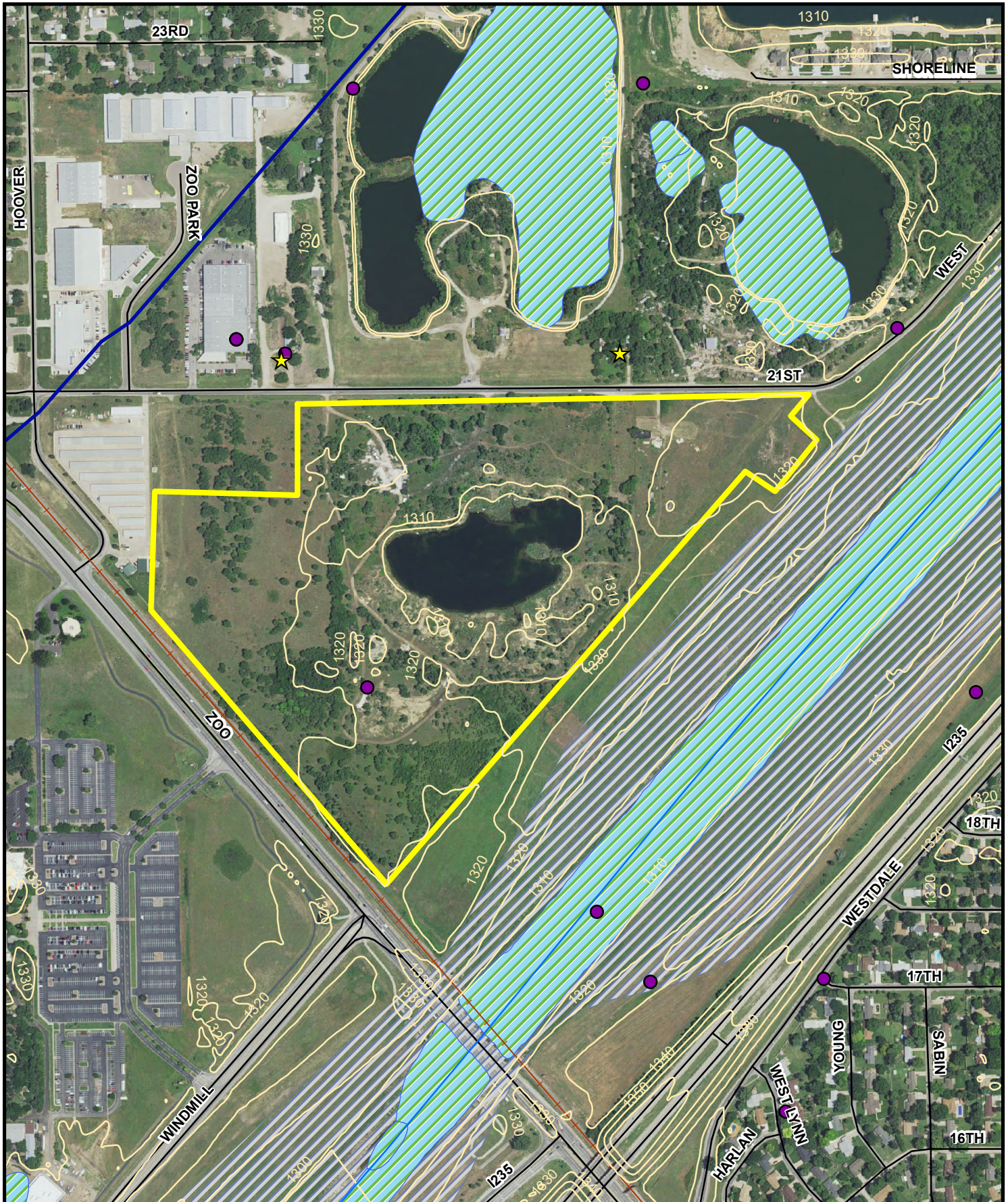
3.1.1 Description of the Site

The Proposed Site consists of areas of open grassland/pasture, open sandy areas, and numerous shrubs and trees. A 7-acre sand pit is located in the center portion of the site and is filled with water, essentially creating a small lake (Figure 3-1). Elevations at the site range from 1,302 to 1,332 feet. A portion of the northwest corner of the site is currently being used to store various construction materials (i.e. culverts). No residences are located on the site.

3.1.2 Known Constraints/Issues

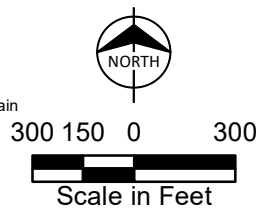
Constraints or issues within or adjacent to the Proposed Site include potential grading issues for facility construction due to elevation changes on the site, an existing railroad that parallels the site boundary along Zoo Boulevard, an existing levee along the eastern border of the site, and the existing sand pit located within the site. The existing railroad between Zoo Boulevard and the site boundary would most likely prevent access to the site from Zoo Boulevard, and the Wichita Valley Center Floodway levee along the eastern boundary of the site would prevent any access from the east. The existing sand pit would likely need to be filled in to allow for additional space to accommodate the planned WTF. A KDHE environmental interest site occurs on the property as well; however, this site is a compost facility used by Wichita State University and would likely not be of concern during construction of the WTF. Noise during construction could be a concern for the two residences located within 300 feet of the site.

Three occurrence boundaries for rare species are found on the site based on DASC data, including the least tern (*Sterna antillarum*), small flower dwarf bulrush (*Lipocarpa micrantha*), and cluster spike rush (*Eleocharis geniculata*). However, no impacts to Federal or state protected species are anticipated, and no critical habitat occurs on site. A historic trail crosses the southern portion of the site in an east/west



Legend

- ★ House
- KDHE Environmental Interest Site
- General Pipeline
- Elevation
- Railroad
- Proposed Site
- NWI Wetland
- FEMA Floodplain



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**Figure 3-1
Wichita Northwest
Water Treatment Facility
Proposed Site**

direction. However, since this trail has no protected status, it is not expected to be an issue for the development of a future WTF. Additional information about the historic trail is located in Appendix B.

3.1.3 Siting Difficulty

Construction of the WTF on the Proposed Site appears feasible from a desktop perspective, although there are several issues present for this site that are not applicable to the two alternate sites. Substantial tree removal would be required for this site, the existing sand pit would most likely need to be filled in, extensive grading might be required, and access to the site would most likely only be feasible from the north via 21st Street. Additionally, tree removal and the filling in of the sand pit could require various environmental permits.

3.2 Alternative Site 1

Alternative Site 1 is approximately 143.8 acres and is bordered by 45th Street to the north, 135th Street to the west, an existing WTF to the south, and cultivated farm fields to the east. Figure 3-2 illustrates the boundary of Alternative Site 1.

3.2.1 Description of the Site

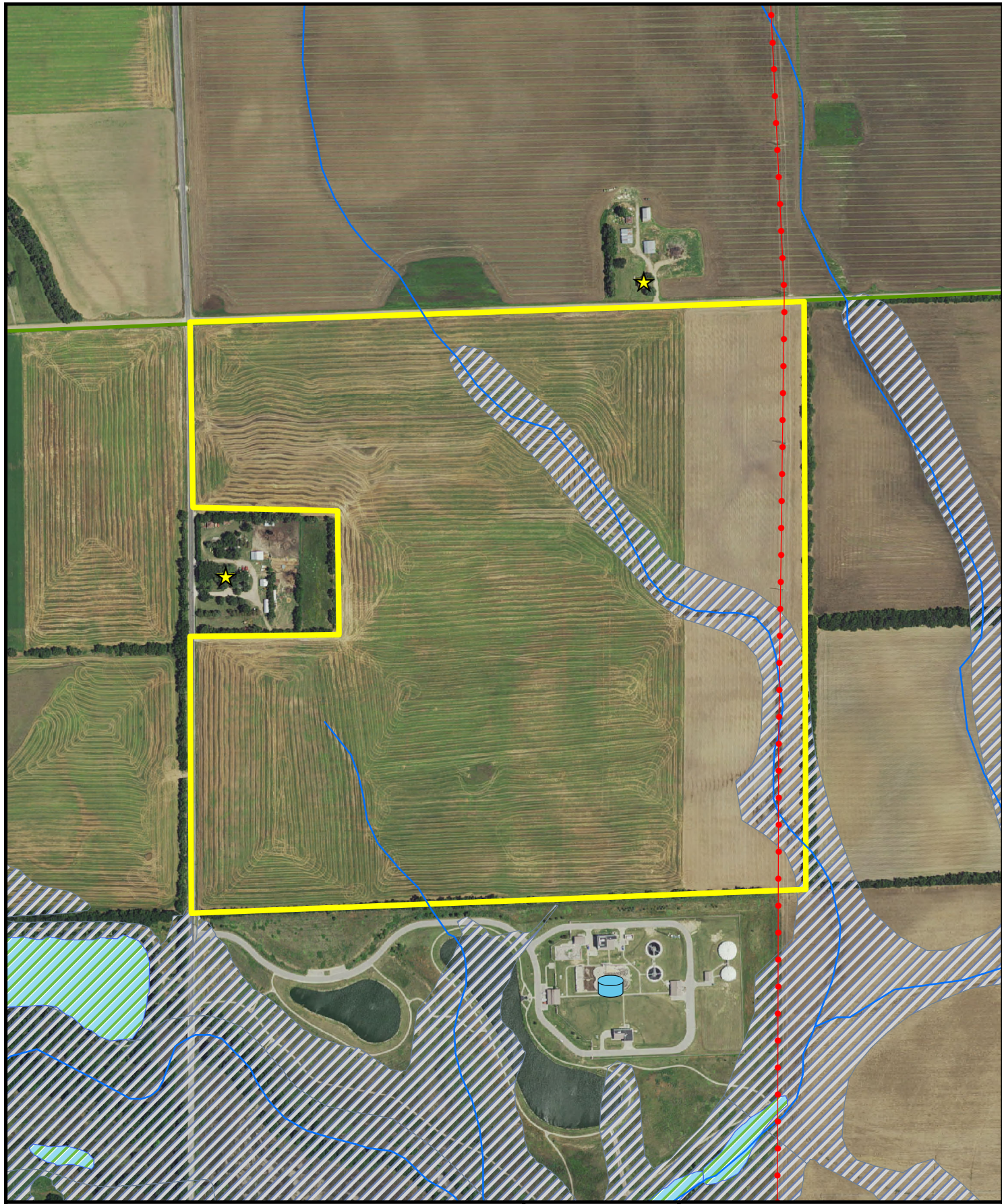
Alternative Site 1 is a quarter-section square, minus an approximately 6.75-acre residential parcel located on the western side of the quarter-section along 135th Street. Alternative Site 1 appears to be used for cultivated crops. The site contains no trees except within the existing fencerows comprising the southern and eastern borders of the site. The site is generally level in elevation with a range of 1,352 to 1,365 feet. According to the National Hydrology Dataset (NHD) GIS information, there are two small streams located on the site totaling approximately 4,000 feet in length; however, these streams do not appear to be perennial in nature, but merely serve as drainage swales. An area of floodplain (approximately 12.6 acres) exists along the drainage swale in the eastern portion of the site (Figure 3-2). An existing Westar Energy, Inc. overhead 138-kV transmission line parallels the eastern border of the site as well.

3.2.2 Known Constraints/Issues

There appear to be few constraints or issues with construction of a WTF on Alternative Site 1. The presence or absence of the NHD streams would need to be verified, as these could present issues during construction if present. Avoidance of the floodplain would need to occur during construction as well. Noise during construction could be a concern for the two residences located within 300 feet of the site.

No known occurrences of rare species are located on the site according to DASC records, no impacts to Federal or state protected species are anticipated, and no critical habitat occurs on the site. An old Indian

Path: Z:\Clients\ENS\DukeEnr\Corp\101205_AVON\138KV\Studies\Siting\Wichita Water Treatment Proposal\GIS\Alternate Site 1_JWD.mxd jduham 1/9/2018
COPYRIGHT © 2018 BURNS & McDONNELL ENGINEERING COMPANY, INC.
Service Layer Credits:



Legend

Alternative Site 1	Existing Transmission Line
WaterTreatment	Stream
NW1 Wetland	FEMA Floodplain
House	Elevation

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Figure 3-2
Wichita Northwest
Water Treatment Facility
Alternative Site 1

boundary crosses the northern portion of the site in an east/west direction. However, since this boundary has no protected status, it is not expected to be an issue for the development of a future WTF. Additional information about the old Indian boundary is located in Appendix B.

3.2.3 Siting Difficulty

From a desktop perspective, there appears to be little difficulty with siting a WTF on Alternative Site 1, as long as the facility is not located within the existing floodplain. The site is generally level, so minimal grading would be required. Minimal, if any, tree clearing would be required. Adequate access to the site occurs from the roadways along the western and northern site boundaries.

3.3 Alternative Site 2

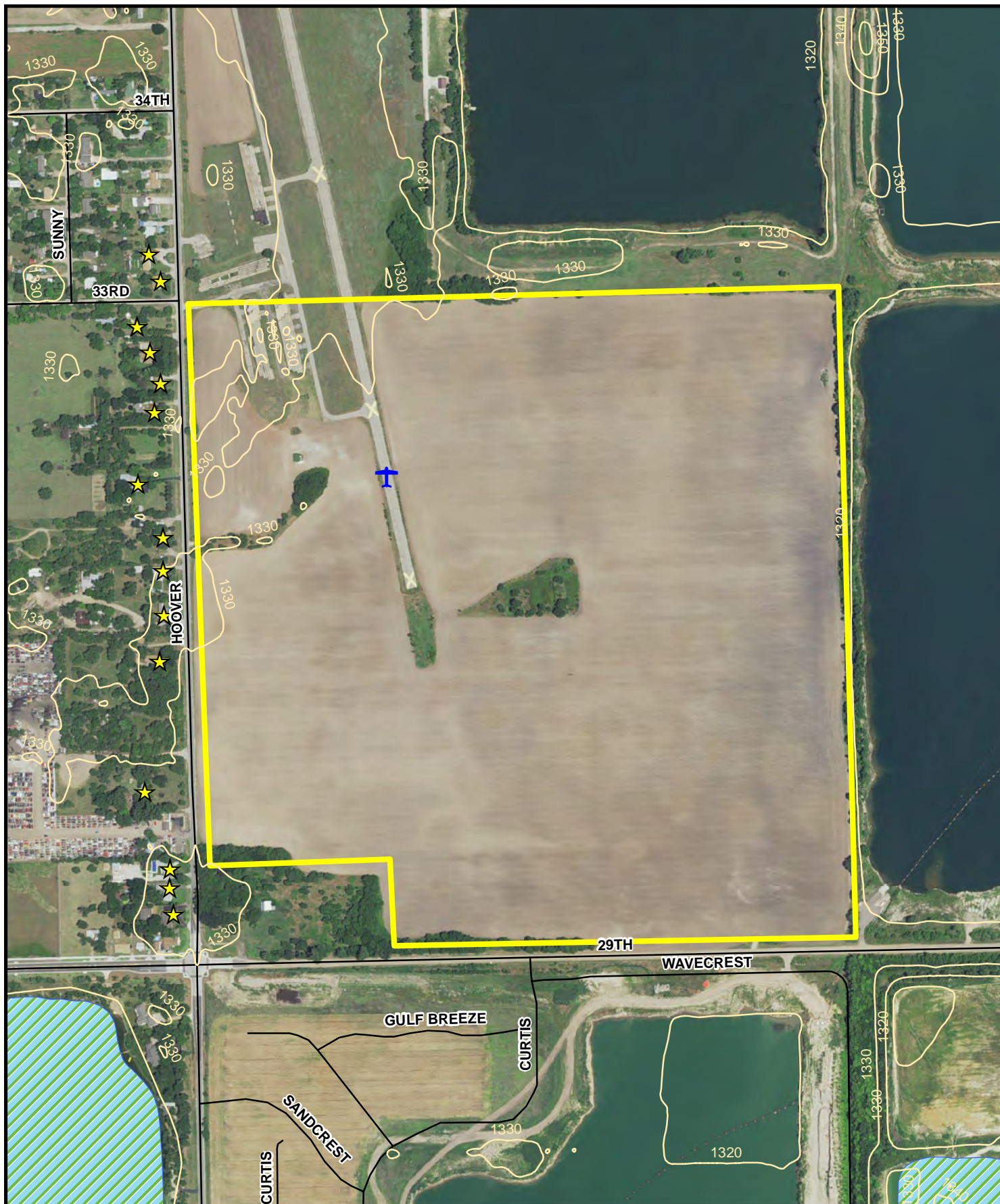
Alternative Site 2 is approximately 148.1 acres and is bordered by Hoover Road to the west, 29th Street to the south, a mining pit reservoir to the east, and a mining pit reservoir and abandoned airport facility to the north. Figure 3-3 illustrates the boundary of Alternative Site 2.

3.3.1 Description of the Site

Alternative Site 2 is a quarter-section square, minus an approximately 6-acre parcel located on the northeast corner of the intersection of Hoover Road and 29th Street. Alternative Site 2 incorporates part of an abandoned airport and airstrip, while the remaining acreage appears to be used as cultivated cropland. Alternative Site 2 contains very few trees, and these are confined to two small areas within the site. The site is fairly level with elevations between 1,319 and 1,332 feet. Higher elevations occur in the northwestern portion of the site with minimum elevations occurring in the southeastern portion (Figure 3-3).

3.3.2 Known Constraints/Issues

There appear to be few constraints or issues with construction of a WTF on Alternative Site 2. KDHE data shows the previous presence of above and/or underground storage tanks in the northwest corner of the site; however, these tanks have been removed from the site. Noise during construction could be a concern for the 15 residences located within 300 feet of the site across Hoover Road. Access would be adequate using existing roadways bordering the site. Two occurrence boundaries for the least tern (*Sterna antillarum*) are found on the site according to DASC data; however, no impacts to Federal or State protected species are anticipated, and no critical habitat occurs on the site. In addition, no cultural resources sites were identified on the site.



Legend

-  Abandoned Airstrip
-  House
-  Elevation
-  Alternative Site 2
-  NWI Wetland

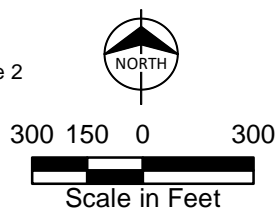


Figure 3-3
Wichita Northwest
Water Treatment Facility
Alternative Site 2

3.3.3 Siting Difficulty

From a desktop perspective, there appears to be little difficulty with siting a WTF on Alternative Site 2. Existing roadways on two sides of the site would provide adequate access to the proposed facility. Minimal tree clearing would be required, if at all, depending on the placement of the facility within the site. The site is generally level and would most likely require minimal grading.

4.0 SUMMARY

Following is a summary table (Table 4-1) showing a comparison of each WTF site.

Table 4-1 Wichita Northwest Water Treatment Facility Site Comparison Summary

Comparison Factor	Wichita Northwest Water Treatment Facility (WTF) Sites		
	Proposed Site	Alternative Site 1	Alternative Site 2
General Information			
Location (description)	located at intersection of Zoo Boulevard & 21st Street in Sedgwick Co., KS	located at intersection of 45th Street and 135th Street in Sedgwick Co., KS	located at intersection of Hoover Road and 29th Street in Sedgwick Co., KS
Size (acres)	75.5	143.8	148.1
Property Ownership	City of Wichita	Brungardt Marcia K Etal	Cornejo & Sons LLC
Total Value of Property (\$)	\$734,890	\$41,210	\$27,210
Existing Easements and Right-of-Way	none known	existing Westar Energy overhead 138-kV transmission line runs north/south near eastern boundary of site	none known
Environmental/Land Use			
NWI Wetlands (acres)	0	0	0
Floodplains (acres)	0	12.6	0
Stream Length (feet)	0	4,000	0
Topography	Site has minimum elevation of 1,302 ft. and maximum elevation of 1,332 ft. The minimum occurs at pond and goes up in all directions on property. The highest elevation is located on western side of property.	Site has a minimum elevation of 1,352 ft. and a maximum elevation of 1,365 ft. The minimum occurs at the SE corner and the maximums are experienced at the western side of the property.	Site has minimum elevation of 1,319 ft. and maximum elevation of 1,332 ft. The minimum occurs at SE corner and maximums are located on NW corner of property.
Protected Species	no impacts to Federal or state protected species anticipated; no critical habitat	no impacts to Federal or state protected species anticipated; no critical habitat	no impacts to Federal or state protected species anticipated; no critical habitat
NRCS Easements (acres)	0	0	0
Existing Land Use	mix of open grassland/pasture, open sandy areas, and numerous shrubs and trees; also includes sand pit filled with water	cropland	cropland
Zoning	single family	rural residential	single family

Comparison Factor	Wichita Northwest Water Treatment Facility (WTF) Sites		
	Proposed Site	Alternative Site 1	Alternative Site 2
KDHE Environmental Interest Site	solid waste regulated facility - active composting facility on site	none	above and/or underground storage tank in NW corner of site; all tanks inactive and have been removed
Access/Constructability			
Tree clearing	most tree clearing required of all sites	very little anticipated	very little anticipated
Access roads	via 21st Street	via 45th Street or 135th St.	via Hoover Rd. or 29th St.
Social Considerations			
Cultural Resource Sites	historic trail crosses southern portion of property in east/west direction	an old Indian boundary is located in the northern portion of site that runs in east/west direction	None
Residences within 300 Feet (number)	2	2	15
Public facilities within 500 feet (number)	0	0	0
Other Concerns/Constraints			
Description of Concern/Constraint	levee runs northeast and adjacent of site; railroad track runs northwest of site adjacent to Zoo Boulevard; sand pit within site		abandoned, inactive airstrip on site;

APPENDIX A - THREATENED AND ENDANGERED SPECIES LIST

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sedgwick County, Kansas



Local office

Kansas Ecological Services Field Office

☎ (785) 539-3474

📠 (785) 539-8567

2609 Anderson Avenue
Manhattan, KS 66502-2801

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

¹ are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Least Tern <i>Sterna antillarum</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8505	Endangered
Whooping Crane <i>Grus americana</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/758	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service

³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or are known to have particular vulnerabilities in your project location. To learn more about the levels of concern for birds on your list, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your specific project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the [E-bird data mapping tool](#) (search for the scientific name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain time-frame) and the [E-bird Explore Data Tool](#) (perform a query to see a list of all birds sighted in your county or region and within a certain time-frame). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found [below](#).

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC), but is of concern in this area either because of the Eagle Act, or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds elsewhere
Chestnut-collared Longspur <i>Calcarius ornatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC), but is of concern in this area either because of the Eagle Act, or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Apr 1 to Aug 31
Harris's Sparrow <i>Zonotrichia querula</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Henslow's Sparrow <i>Ammodramus henslowii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Hudsonian Godwit <i>Limosa haemastica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

Red-headed Woodpecker *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper *Calidris pusilla*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Sprague's Pipit *Anthus spragueii*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8964>

Willet *Tringa semipalmata*

Breeds Apr 20 to Aug 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (I)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

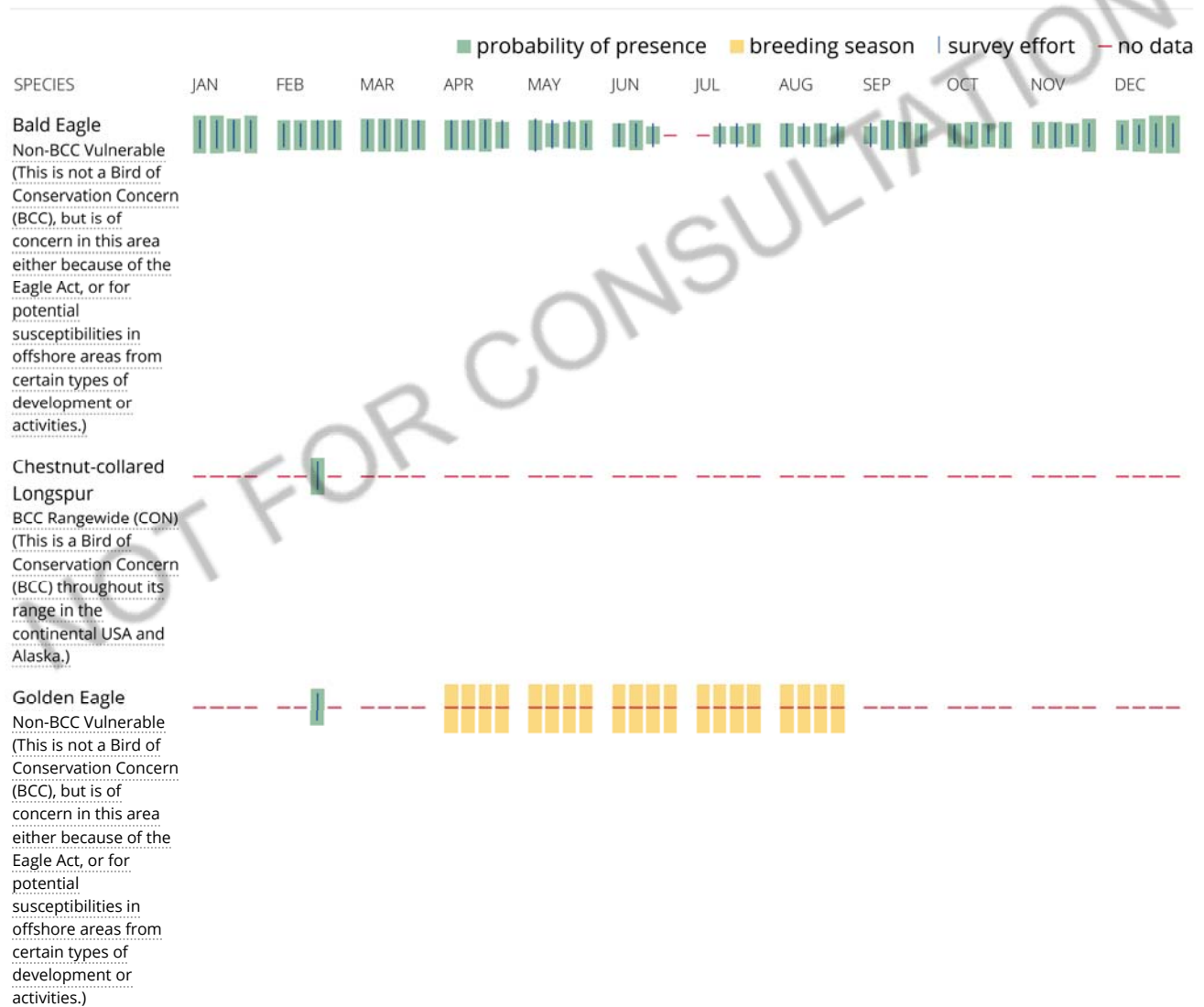
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

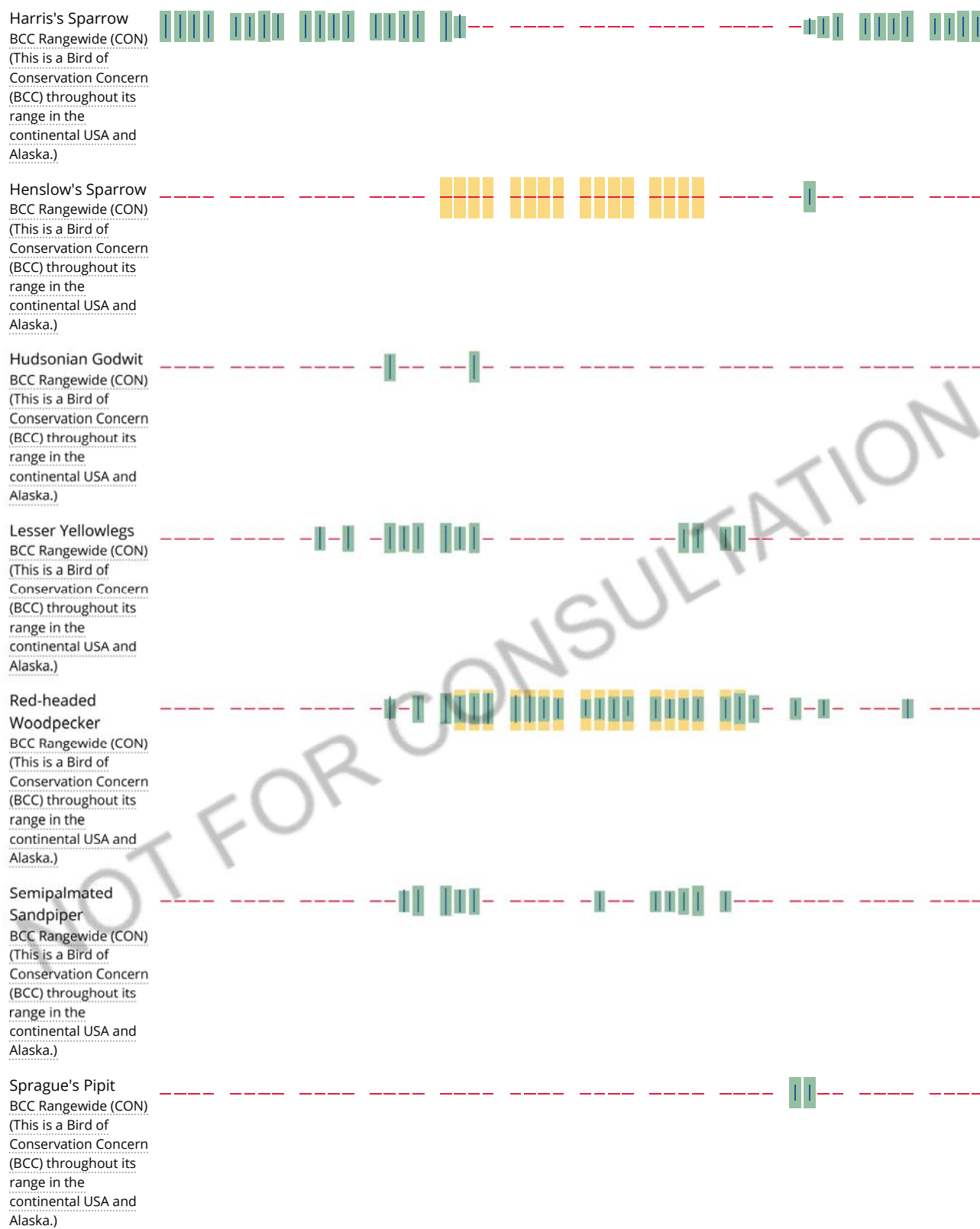
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information.





Willet

BCC Rangewide (CON)
(This is a Bird of
Conservation Concern
(BCC) throughout its
range in the
continental USA and
Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Such measures are particularly important when birds are most likely to occur in the project area. To see when birds are most likely to occur in your project area, view the Probability of Presence Summary. Special attention should be made to look for nests and avoid nest destruction during the breeding season. The best information about when birds are breeding can be found in [Birds of North America \(BNA\) Online](#) under the "Breeding Phenology" section of each species profile. Note that accessing this information may require a [subscription](#). [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) that might be affected by activities in your project location. These birds are of priority concern because it has been determined that without additional conservation actions, they are likely to become candidates for listing under the [Endangered Species Act \(ESA\)](#).

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#). The AKN list represents all birds reported to be occurring at some level throughout the year in the counties in which your project lies. That list is then narrowed to only the Birds of Conservation Concern for your project area.

Again, the Migratory Bird Resource list only includes species of particular priority concern, and is not representative of all birds that may occur in your project area. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird entry on your migratory bird species list indicates a breeding season, it is probable the bird breeds in your project's counties at some point within the time-frame specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

[Avoidance and minimization measures](#) should be implemented to reduce impacts to birds on your list, and all other birds that may occur in your project area. Nationwide Standard Conservation Measures can be applied for any project, regardless of project type or location.

If measures exist that are specific to your activity or to any of the species on your list that are confirmed to exist at your project area, these should also be considered for implementation in addition to the Nationwide Standard Conservation Measures. Implementation of avoidance and minimization measures is particularly important for BCC birds of rangewide concern.

If your project has the potential to disturb or kill eagles, you will need to [obtain a permit](#) to avoid violating the BGEPA should such impacts occur.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.



This location overlaps the following National Wildlife Refuge lands:

LAND

ACRES

Great Plains Nature Center

11.37 acres

 (316) 683-5499 (316) 688-9555

6232 East 29th Street North
Wichita, KS 67220-2200

<https://www.fws.gov/refuges/profiles/index.cfm?id=64621>

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION


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Sedgwick County



Threatened and Endangered (T&E) Species

Critical Habitat Designated

ARKANSAS RIVER SHINER *Notropis girardi*

State: Endangered **Federal:** Threatened **Critical Habitat:** Yes

PLAINS MINNOW *Hybognathus placitus*

State: Threatened **Federal:** N/A **Critical Habitat:** Yes

SILVER CHUB *Macrhybopsis storeriana*

State: Endangered **Federal:** N/A **Critical Habitat:** Yes

PEPPERED CHUB *Macrhybopsis tetranema*

State: Endangered **Federal:** N/A **Critical Habitat:** Yes

EASTERN SPOTTED SKUNK *Spilogale putorius*

State: Threatened **Federal:** N/A **Critical Habitat:** Yes

ARKANSAS DARTER *Etheostoma cragini*

State: Threatened **Federal:** Candidate **Critical Habitat:** Yes

No Critical Habitat Designated

WHOOPING CRANE *Grus americana*

State: Endangered **Federal:** Endangered **Critical Habitat:** No

LEAST TERN *Sterna antillarum*

State: Endangered **Federal:** Endangered **Critical Habitat:** No

PIPING PLOVER *Charadrius melodus*

State: Threatened **Federal:** Threatened **Critical Habitat:** No

SNOWY PLOVER *Charadrius alexandrinus*

State: Threatened **Federal:** N/A **Critical Habitat:** No

Species In Need of Conservation (SINC)

There are no SINC species with critical habitat in Sedgwick county

River Shiner *Notropis blennioides*

State: SINC **Federal:** N/A **Critical Habitat:** No

Western Hognose Snake *Heterodon nasicus*

State: SINC **Federal:** N/A **Critical Habitat:** No

Alligator Snapping Turtle *Macrochelys temminckii*

State: SINC **Federal:** N/A **Critical Habitat:** No

Black Tern *Chlidonias niger*

State: SINC Federal: N/A Critical Habitat: No

Short-eared Owl *Asio flammeus*

State: SINC Federal: N/A Critical Habitat: No

Chihuahuan Raven *Corvus cryptoleucus*

State: SINC Federal: N/A Critical Habitat: No

Ferruginous Hawk *Buteo regalis*

State: SINC Federal: N/A Critical Habitat: No

Golden Eagle *Aquila chrysaetos*

State: SINC Federal: N/A Critical Habitat: No

Southern Flying Squirrel *Glaucomys volans*

State: SINC Federal: N/A Critical Habitat: No

Eastern Hognose Snake *Heterodon platirhinos*

State: SINC Federal: N/A Critical Habitat: No

Black Rail *Laterallus jamaicensis*

State: SINC Federal: N/A Critical Habitat: No

Bobolink *Dolichonyx oryzivorus*

State: SINC Federal: N/A Critical Habitat: No

Henslow's Sparrow *Ammodramus henslowii*

State: SINC Federal: N/A Critical Habitat: No

Long-billed Curlew *Numenius americanus*

State: SINC Federal: N/A Critical Habitat: No

Mountain Plover *Charadrius montanus*

State: SINC Federal: N/A Critical Habitat: No

Yellow-throated Warbler *Setophaga dominica*

State: SINC Federal: N/A Critical Habitat: No

Cerulean Warbler *Setophaga cerulean*

State: SINC Federal: N/A Critical Habitat: No

Eastern Whip-poor-will *Antrostomas vociferus*

State: SINC Federal: N/A Critical Habitat: No

APPENDIX B – CULTURAL RESOURCES INFORMATION

Proposed Site – Historic Trail

The General Land Office map does not have a name listed with the historic trail on the site. It appears that it is a trail that branches from the Indian Trail that led to the salt flats (Salt Plains) in Oklahoma. In 1811, George C. Sibley led an expedition from Fort Osage in Missouri to the Salt Plains. An Osage guide, named Sans Orielle led the expedition to the Salt Plains. It is believed that Sibley and his men were the first European descended men to have visited the Salt Plains. The Salt Plains are located in what is now Alfalfa County, Oklahoma. When the Cherokee were removed to their reservation in Oklahoma, the Salt Plains became part of their lands. During Treaty negotiations it was declared that the Salt Plains must remain open to other tribes.

Alternative Site 1 – Old Indian Boundary

The Indian border on the site that runs east/west on the site in the northern portion of the site was a reservation boundary. From around 1825 until the mid-1860s, portions of Kansas were used as reservation lands for tribes removed from the west. At the time, Kansas was not part of the Union. It was Indian Territory. On the north side of the border was a reservation for the Osage, and on the south side of the border was a reservation for the Cherokee. Through treaties in 1818 and 1825, the Osage ceded land in Missouri, Arkansas, and Oklahoma for a reservation in southeast Kansas. This land was called the Osage Diminished Reserve. In the 1820s, the Osage suffered a smallpox epidemic which greatly diminished their numbers. They would suffer another epidemic in 1855. During the Civil War, the Osage sided with the Confederacy. After the war, during the Reconstruction era, the Osage agreed to the Drum Creek Treaty, passed by Congress on July 15, 1870. They sold their lands in Kansas to the United States for \$1.25 per acre, which is better than the original United States offer of \$0.19 per acre. The sale of the Kansas lands at a better rate allowed the Osage to purchase their own reservation lands in the Cherokee Outlet in Indian Territory (Oklahoma).

The Treaty of New Echota of May 23, 1836, would remove the Cherokee from their homelands in the southeastern United States for a reservation in Indian Territory (Kansas). The reservation was called the Cherokee Neutral Tract and it consisted of 800,000 acres set on the southern border of the Osage Reservation. Very few Cherokee lived on the reservation. In 1866, the Cherokee ceded the reservation land to the United States for a reservation in Oklahoma.



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